

Hiroshi INOUE*: Contributions to the Knowledges of the
Plagiophilaceae of South-Eastern Asia 1

1. Two interesting species of *Plagiophila* from Formosa

井上 浩*: アジア産ハネゴケ科えの寄与 I. 台湾産ハネゴケ属の二種について

On the previous year I published a review of Plagiophilaceae of Japan and Formosa. The materials from Formosa in that review were mainly collections reserved in the herbarium of National Science Museum of Tokyo and Prof. Y. Horikawa's type materials in the herbarium of Hiroshima University. Recently, through Dr. Kobayashi's kind offices, I had an opportunity to study some additional materials from Formosa. Those materials had been reserved in the herbarium of "Taiwan University" of Formosa and were sent to National Science Museum of Tokyo.

Among the materials I could confirm two interesting species of *Plagiophila*, one of which is new to Formosan flora and previously poorly known, and the other is new to science.

I am much indebted to Dr. Y. Kobayashi of the National Science Museum of Tokyo for his kind permission to examine the materials, to Prof. H. Ito and Dr. S. Hattori for their many-sided suggestions and criticisms.

Plagiophila chinensis Steph. Mem. Soc. Nat. Cherbourg 29: 223, 1894; Spec. Hepat. 2: 116, 1903; Dugas, Ann. Sci. Nat. Bot. 10: 105, 1929; Carl, Ann. Bryol. suppl. 2: 115, 1931, sine descr.—*Plagiophila irrigata* Herz. Symb. Sinic. 5: 18, fig. 5 (1-6), 1930, syn. nov. (Fig. 1)

Plants in dense patches, yellowish to somewhat brownish green, with densely tangled, creeping caulid. Aerial shoot ca. 4 cm long, 2.5-4.0 mm wide with leaves, moderately forked, main caulid not recognizable, branches arising from ventral side of caulid; caulid slightly flattened dorsiventrally, ca. 0.3×0.35 mm thick, well differentiated into cortical and interior layers, cortex 3-4 strata of slightly tangentially flattened cells, $8-10 \times 13-20 \mu$ in diameter, thick-walled, walls yellowish to deep brown; medullary, cells 12×17 across, $20-30 \times 30 \mu$ in diameter, thin-walled, wall yellowish to pale brownish. Rhizoids present on lower caulid, colorless, absent on aerial caulid. Leaves distant to weakly imbricate, with an arched line of insertion,

* Botanical Institute, Faculty of Science, Tokyo University of Education, Koishikawa, Tokyo. 東京教育大学理学部植物学教室.

nearly horizontally spreading, ovate-oblong, 1.6–1.8 mm long \times 1.1 mm wide, occasionally 2 mm long \times 1.6 mm wide (usually 1.2–1.4 times as long as wide), antical margin nearly straight, strongly incurved, long decurrent, with 2–5 small additional

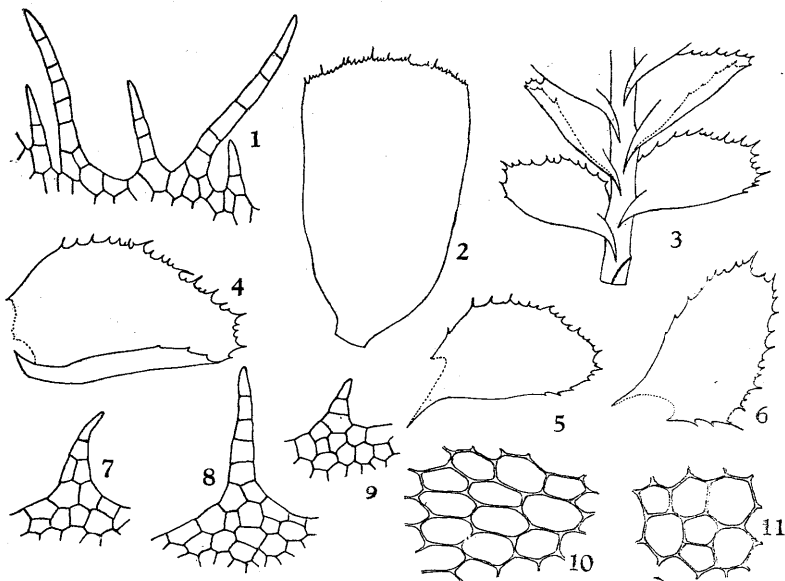


Fig. 1. *Plagiochila chinensis* Steph. 1. Part of perianth mouth, $\times 155$. 2. Perianth, $\times 10$. 3. Part of plant, antical view, $\times 10$. 4. Female bract, $\times 10$. 5-6. Leaves, $\times 10$. 7-8. Marginal teeth of leaves, $\times 135$. 9. Cells from leaf-base, $\times 300$. 10. Cells from leaf-middle, $\times 300$. 11. Ditto from leaf-middle, $\times 300$.

teeth on distal half, postical margin convex, with 8–14 strong teeth, moderately decurrent, apex subtruncate to round, usually with two prominent teeth and 2–4 small additional teeth (thus leaves have apparently a little suggestion to bilobe); marginal teeth triangular to spiniform, mostly 2–3 cells wide at base and 3–6 cells long, terminal cell 1.8–2.8 times as long as wide, acute. Cells of leaf apex hexagonal, $15\text{--}20 \times 17\text{--}28 \mu$, of middle $27\text{--}30 \times 27\text{--}34 \mu$ or occasionally $20\text{--}23 \times 30 \mu$ of near base moderately elongated, $20\text{--}23 \times 36\text{--}40 \mu$, trigones distinct, small to medium, slightly bulging, 1 or 2 marginal rows of cells somewhat thick-walled, interior cells thin-walled. Underleaves not seen. Plants unisexual. Male plants not seen. Female inflorescence terminal on caulid, with 1 or 2 subfloral innovations; bracts similar to leaves in shape, a little larger (2.7 mm long \times 1.8–2.0 mm wide approximately), antical margin more strongly convex, teeth more than 20, long, acute,

rarely furcate, apex mostly subtruncate, with 2 distinct and large teeth; well developed perianth long exerted, ca. 3 mm long and 2 mm wide at mouth, cylindrical, mouth mostly a little bent laterally, nearly truncate, margin of mouth ciliate-dentate, teeth 1-2 cells wide at base 3-8 cells long, cells of perianth wall similar to those of leaves but a little more thick-walled; archegonia about 19.

Loc.: Formosa; Mt. Asahi of Prov. Kwarenko (K. Sawada coll., May 2, 1919 —in herb. TNS). Distr.: China (Yünnan, Setschwan); new to Formosa.

This species has been known only from China, and the records from Japan by Yoshinaga, Stephani, and Dugas (See Inoue, 1958) seem erroneous. Formosan material well agrees with Stephani's descriptions and figures (Icon. Hepat. ined.).

P. chinensis may be well characterized and distinguished from all allied species by its leaf form and strongly incurved antical leaf-margin and long decurrent base. By its leaf form, *P. chinensis* is very similar to Japanese *P. asplenoides* subsp. *ovalifolia* var. *miyoshiana* and, virtually, Stephani mistakenly identified Faurie's collections of var. *miyoshiana* as *P. chinensis*. However, *P. chinensis* is distinct from var. *miyoshiana* by its more frequently forked aerial caulid, long decurrent and strongly incurved antical leaf margin, and truncate to ciliated-dentate mouth of perianth. *P. orbicularis*, which seems close to *P. chinensis* by its similar rhizomatous caulid, antical leaf-margin, and perianth form, is distinct in its form and marginal dentations of leaf, and much more elongated cells at leaf-base. *P. chinensis* is also distinctly differentiated from *P. asplenoides* by its leaf form and perianth mouth (more distinctly ciliate). *P. irrigata* of Herzog cannot be distinguished from *P. chinensis*.

Carl (1981) enumerated this species in the sect. *Renitentes* (pars. 2). However, this species belongs to the sect. *Asplenoides* by its branching system, leaves without distinct vitta-cells at leaf base, and, especially, by its perianth form and number of archegonia. Carl's *Renitentes* seems close to the sect. *Zonatae*.

Plagiochila sawadae Inoue, sp. nov.¹⁾ (Fig. 2)

¹⁾ Dioica; mediocris, brunnea, dense caespitosa. Caulis 2-3 cm longus, cum foliis 2-3 mm latus, parum ramosus, validus, brunneolus. Folida caulina imbricata, oblique patula, sub angulo 60-70 patentia, trigono-ovata, 1.8-2.1 mm longa, basi 1.7-1.9 mm lata, margine antico substricto, 2-6 dentato, longius decurrentibus incurvo, apice truncato vel rotundato, 4-6 dentato, dentibus triangularibus, acutis. Cellulae apicales subquadratae, 20-27 μ , medianae 30-33 \times 30-37 μ , basales 13-20 \times 67-82 μ , trigonis magnis, nodulosis, vittam bene distinctam formatibus. Folia floralia caulinis simillima. Perianthia 3.5-4.0 mm longa, ca. 1.8 mm lata, cylindrica, ore rotundato, irregulariter dentato. Androeceia subterminalia, bracteis 10-13 jugis.

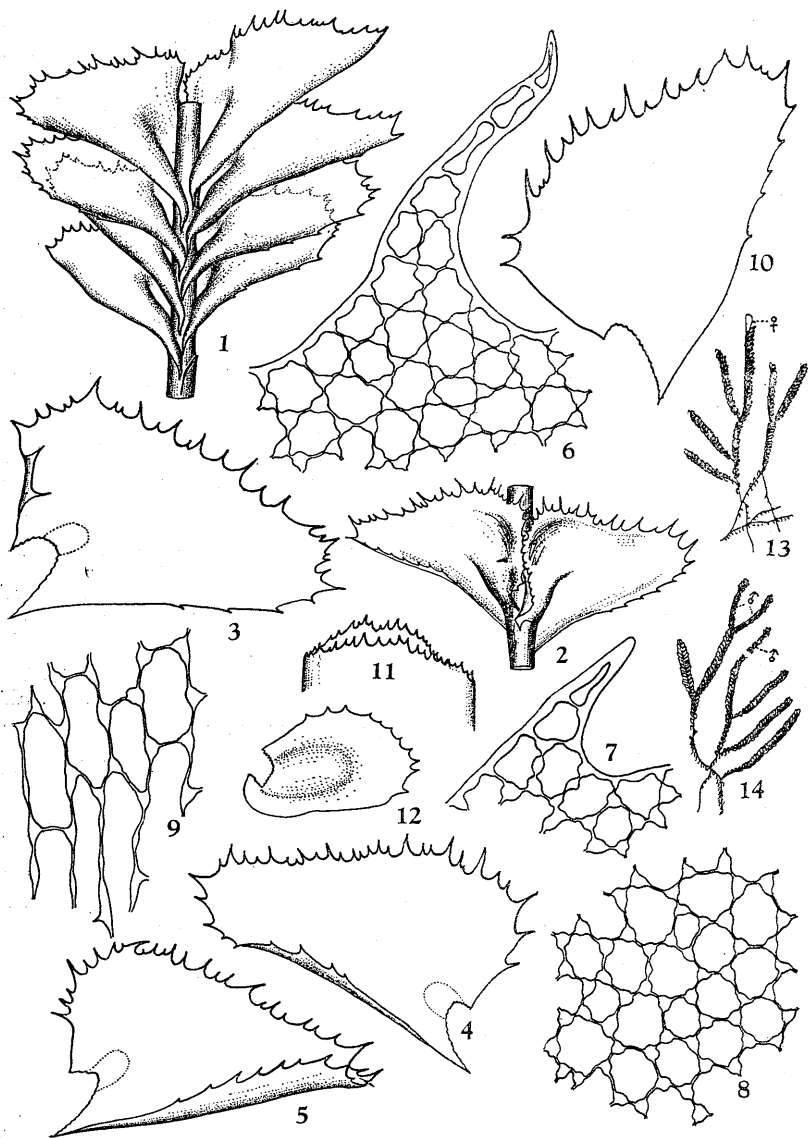


Fig. 2. *Plagiochila sawadae* Inoue. 1. Part of plant, antical view, $\times 10$. 2. Ditto, postical view, $\times 10$. 3-5. Leaves, $\times 13$. 6. Cells from ventral leaf-margin, $\times 300$. 7. Ditto from dorsal leaf-middle, $\times 300$. 8. Ditto from leaf-base, $\times 300$. 9. Ditto from leaf-middle, $\times 300$. 10. Female bract, $\times 13$. 11. Mouth of perianth, $\times 10$. 12. Male bract, $\times 20$. 13-14. Habitat, $\times 1$. All figures are drawn from holotype specimen.

Plants in dense patches, light brown, clearly differentiated into creeping rhizomatous caulid and arising aerial shoot; aerial leafy shoot 2-3 mm wide, 2-3 cm long. Caulid 0.2-0.25 mm thick, moderately branched, branches from ventral half of leaf axil; cortical cells clearly differentiated from interior cells, 3-4 strata, tangentially flattened, ca. $7 \times 12 \mu$, thick-walled, wall reddish to blackish brown, medullary cells larger, 10-15 across, ca. $17-24 \mu$ or $33 \times 19 \mu$, thin-walled, wall pale brownish. Rhizoids scarcely present on rhizomatous caulid, not on aerial part, colorless. Leaves closely imbricate, spreading at an angle of 60-70 degrees, triangular-ovate, 1.8-2.1 mm long, 1.7-1.9 mm wide at ampliate base, 0.7-0.8 mm wide near apex, antical margin nearly straight to slightly concave, with 2-6 additional small teeth on distal half, strongly incurved, long decurrent at base, postical margin nearly straight from ampliate base which is usually overlapping on caulid, with more than 15 strong teeth, moderately to long decurrent at base, apex narrowly truncate to rotundate, with 4-6 teeth (2 of them most prominent); leaves often slightly undulate at postical margin, teeth of postical margin triangular, sharp, 2-3 cells wide at base 4-8 cells long, those of antical margin 1-2 cells wide at base and 1-3 cells long, terminal cells 2.2-3.0 times as long as wide. Underleaves rudimentary, filiform, bifid to base. Cells of leaf apex nearly quadrate, $20-27 \mu$ in diameter, of middle $30-33 \times 30-37 \mu$, of base forming vitta, much elongated, $13-20 \times 67-82 \mu$, of margin $16-23 \times 22-33 \mu$, walls of 1 or 2 marginal strata of cells slightly thickened, medullary cells thin-walled but occasionally with intermediate thickenings, pale brownish yellow, trigones large, rarely confluent, triangular-nodulose, cuticle smooth. Plants unisexual. Male plants in same patches with female ones; male inflorescence intercalary, bracts ovate-oblong, with ca. 10 weak marginal teeth on distal half, strongly inflated at base, in 10-13 pairs, closely imbricate; antheridia 2. Female inflorescence terminal on caulid; bracts similar to leaves in shape, a little larger (ca. 2.4 mm long \times 1.8 mm wide), with stronger marginal teeth, slightly inflated at base; perianth long exserted, ca. 1.8 mm wide at mouth, 3.5-4.0 mm long, cylindrical, mouth moderately arched, irregularly denate; archegonia ca. 20.

Loc.: Formosa; Boraikai in Prov. Kwarenko (K. Sawada coll., Aug. 7, 1927—holotype, in herb. TNS).

This species seems to be very close to three poorly known Himalayan species, *P. pseudorenitens* Schiffn., *P. durrellii* Schiffn., and *P. longicalyx* Steph. According to the original description and figure by Schiffner (1899) (though the description is so brief that the sufficient knowledge of the species is not available) the leaves of

P. pseudorenitens are ovate and have longer and stronger marginal teeth, and the cell walls are more thickened. *P. durrellii* may be closer to *P. sawadae* than *P. pseudorenitens* is. According to the descriptions by Schiffner (1899) and Stephani (1903), the base of the postical leaf-margin is long decurrent and the caulid is more frequently branched in the upper portion. Another allied species is *P. longicalyx*, which is also very close to *P. durrellii*. *P. longicalyx* is differentiated from *P. sawadae* by long decurrent postical leaf margin and smaller cells with indistinct trigones in the upper part of leaf.

The above stated four species are very close each other and belong to the sect. Zonatae. The more detailed comparisons among those poorly known Himalayan species are needed, consulting the type materials of them.

Literature cited

Inoue, H. 1958. The family Plagiochilaceae of Japan and Formosa I-II. Journ. Hattori Bot. Lab. **19**: 25-59 & **20**: 54-106.—Carl, H. 1931. Die Arttypen und systematische Gliederung der Gattung *Plagiochila* Dum. Ann. Bryol. suppl. **2**: 1-170—Stephani, F. 1903. Species Hepaticarum 2. pp. 615. Geneva. —Schiffner, V. 1899. Beiträge zur Lebermoosflora von Bhutan (Ost-Indien). Oestr. Bot. Zeitschr. **49**: 127-132, 203-207.

摘 要

上野科学博物館の小林博士の御好意によつて台湾大学から贈られてきた故沢田兼吉氏採集の苔類標本を研究することができた。このうちハネゴケ属のもの二種について報告する。*Plagiochila chinensis* は Stephani によつて記録されて以来原標本以外に日本からも採集された報告があるがこれは誤りである。確実なのは支那(雲南)のみであつたが沢田氏採集のものは Stephani の記載及びイコネスにほぼ完全に一致する。Herzog が同じ雲南から記載した *P. irrigata* なるものはその syn-type を調べたところ *P. chinensis* の大形な一形と考えられる。

P. sawadae はヒマラヤに産する *P. pseudorenitens*, *P. durrellii* 及び *P. longicalyx* 等に近い一新種であるが、ヒマラヤの三種は不完全な記載と図しかなく充分な手がかりがつかめない。後日これらの原標本を検討した上でこれらの関係について述べたい。

沢田氏の標本中にはハネゴケはこの他数種含まれているが、いずれも先に発表したハネゴケ科モノグラフに記録した種である。他に1点 *P. firma* と思われるものが混じっているが標本少量のため確認できなかった。